

# **Characterizing the Range of Children's Pollutant Exposures During School Bus Commutes**

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Studies have shown that in-vehicle and near-vehicle pollutant concentrations can be up to ten times higher than those measured at nearby ambient monitoring stations. A study<sup>1</sup> funded by the Air Resources Board (ARB) showed especially high impacts on in-vehicle particle levels when vehicles followed diesel-fueled vehicles. Because most California school buses are diesel-powered, the ARB has launched a comprehensive study to measure pollutant levels children would encounter during their school bus commute. The study is being conducted in the Los Angeles Basin. The study will determine whether on-board pollutant concentrations are higher than those outside the bus; the effect of a bus's own emissions on children's exposures, relative to those from other vehicles; the effect of open versus closed windows on in-bus levels; and differences in levels in the front and back of the bus. The influence of fuel type (diesel, gasoline, and natural gas) and the use of diesel particulate traps will also be investigated. Two full sets of real-time instruments are being used in each bus run, measuring particle mass (PM10 and PM2.5), ultrafine particle counts, CO, NO<sub>2</sub>, VOCs, formaldehyde, black carbon, and particle-bound PAHs. A pilot study was conducted in December, 2001, to document the suitability of the instruments and procedures. The main field study will be conducted in May, 2002. The results will provide a detailed characterization of the contribution school bus trips and time spent in traffic make to children's exposures to air pollution.

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<sup>1</sup> Rodes C, Sheldon L, Whitaker D, Clayton A, Fitzgerald K, Flanagan J, DiGenova F, Hering S, Frazier C (1998). *Measuring Concentrations of Selected Air Pollutants Inside California Vehicles*. Final Report to the California Air Resources Board, ARB Contract 95-339, December 1998.